L Number	Hits	Search Text	DB	Time stamp
1	280	436/523.ccls.	USPAT	2002/12/23 21:22
2	0	436/523.ccls. and nanocrystal	USPAT	2002/12/23 21:23
3	0	436/523.ccls. and quantum adj2 dot	USPAT	2002/12/23 21:23
4	1017	nanocrystal$	USPAT	2002/12/23 21:23
5	1446	nanocrystal$ or quantum adj2 dot$	USPAT	2002/12/23 21:24
6	0	(nanocrystal$ or quantum adj2 dot$) and 436/clas	USPAT	2002/12/23 21:25
7	30	(nanocrystal$ or quantum adj2 dot$) and 436.clas.	USPAT	2002/12/23 21:25

FILE 'HOME' ENTERED AT 21:45:35 ON 23 DEC 2002

=> b ca
COST IN U.S. DOLLARS

	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.21	0.21

FILE 'CA' ENTERED AT 21:45:40 ON 23 DEC 2002

FILE COVERS 1907 - 19 Dec 2002 VOL 137 ISS 26
FILE LAST UPDATED: 19 Dec 2002 (20021219/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

```
=> s nanocrystal? or (quantum dot?)
         15665 NANOCRYSTAL?
        311121 QUANTUM
         33125 DOT?
         10630 QUANTUM DOT?
                 (QUANTUM(W)DOT?)
L1       25600 NANOCRYSTAL? OR (QUANTUM DOT?)

=> s l1 and multiple analyte?
        270119 MULTIPLE
         29254 ANALYTE?
           242 MULTIPLE ANALYTE?
                 (MULTIPLE(W)ANALYTE?)
L2           3 L1 AND MULTIPLE ANALYTE?

=> d ti ab 1-3

L2   ANSWER 1 OF 3  CA  COPYRIGHT 2002 ACS
TI   Method and apparatus for assay for  ***multiple***  ***analytes***
AB   A method and app. for assay of  ***multiple***  ***analytes***  . The
     method uses a sensing element comprising a substrate upon which is
     arranged a multiplicity of recognition elements, such that each element is
     laid out in a predetd. pattern.  Each pattern is unique in that it can
     give rise to a characteristic diffraction pattern in the assay.  The
     patterns may or may not be interpenetrating on the substrate surface.  The
     method of detecting  ***multiple***  ***analytes***  includes
     contacting the medium of analytes with the patterned substrate,
     illuminating the substrate by a light source, and detecting any resultant
     diffraction image.  The pattern of diffraction and the intensity of the
     diffracted signal provides information about the existence of specific
     analytes and their quantification.

L2   ANSWER 2 OF 3  CA  COPYRIGHT 2002 ACS
TI   A method of detecting an analyte using semiconductor  ***nanocrystals***
AB   The use of semiconductor  ***nanocrystals***  as detectable labels in
     various chem. and biol. applications is disclosed.  The methods find use
     for detecting a single analyte, as well as  ***multiple***
       ***analytes***  by using more than one semiconductor  ***nanocrystal***
```

as a detectable label, each of which emits at a distinct wavelength.

L2 ANSWER 3 OF 3 CA COPYRIGHT 2002 ACS
TI Combinatorial chemical library supports having indicia at coding positions and their use in multiplexed analysis
AB A method is disclosed for multiplexed detection and quantification of analytes by reacting them with probe mols. attached to specific and identifiable carriers. These carriers can be of different size, shape, color, and compn. Different probe mols. are attached to different types of carriers prior to anal. After the reaction takes place, the carriers can be automatically analyzed. This invention obviates cumbersome instruments used for the deposition of probe mols. in geometrically defined arrays. In the present invention the analytes are identified by their assocn. with the defined carrier, and not (or not only) by their position. Moreover, the use of carriers provides a more homogeneous and reproducible representation for probe mols. and reaction products than two-dimensional imprinted arrays or DNA chips.

=> d all 2

L2 ANSWER 2 OF 3 CA COPYRIGHT 2002 ACS
AN 133:346793 CA
TI A method of detecting an analyte using semiconductor ***nanocrystals***
IN Bruchez, Marcel P.; Daniels, R. Hugh; Empedocles, Stephen A.; Phillips, Vince A.; Wong, Edith Y.; Zehnder, Donald A.
PA Quantum Dot Corp., USA
SO PCT Int. Appl., 102 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM G01N033-58
ICS G01N033-533; G01N033-542
CC 9-16 (Biochemical Methods)
Section cross-reference(s): 3
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000068692	A1	20001116	WO 2000-US12227	20000505
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	US 6274323	B1	20010814	US 2000-566014	20000505
	EP 1179185	A1	20020213	EP 2000-928836	20000505
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 2001055764	A1	20011227	US 2001-784645	20010215
	US 2001034034	A1	20011025	US 2001-887914	20010621
PRAI	US 1999-133084P	P	19990507		
	US 2000-182845P	P	20000216		
	US 2000-566014	A	20000505		
	WO 2000-US12227	W	20000505		
	US 2000-266290P	P	20000929		

AB The use of semiconductor ***nanocrystals*** as detectable labels in various chem. and biol. applications is disclosed. The methods find use for detecting a single analyte, as well as ***multiple*** ***analytes*** by using more than one semiconductor ***nanocrystal*** as a detectable label, each of which emits at a distinct wavelength.
ST detecting analyte semiconductor ***nanocrystal***
IT Analysis
Chromosome
Fluorometry
Immunoassay
Nanocrystals
PCR (polymerase chain reaction)
Semiconductor materials
(a method of detecting analyte using semiconductor ***nanocrystals***)
IT DNA
Nucleic acids
Oligonucleotides

Peptides, analysis
Polynucleotides
Polysaccharides, analysis
Proteins, general, analysis
RNA
Receptors
RL: ANT (Analyte); ANST (Analytical study)
(a method of detecting analyte using semiconductor ***nanocrystals***
)
IT Antibodies
RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses)
(a method of detecting analyte using semiconductor ***nanocrystals***
)
IT Primers (nucleic acid)
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(a method of detecting analyte using semiconductor ***nanocrystals***
)
IT Recombination, genetic
(amplification; a method of detecting analyte using semiconductor ***nanocrystals***)
IT Immunoassay
(app.; a method of detecting analyte using semiconductor ***nanocrystals***)
IT Analysis
(biochem.; a method of detecting analyte using semiconductor ***nanocrystals***)
IT Nucleic acid hybridization
(in situ, fluorescence; a method of detecting analyte using semiconductor ***nanocrystals***)
IT Molecules
(small; a method of detecting analyte using semiconductor ***nanocrystals***)
IT 1672-46-4, Digoxigenin 2321-07-5, Fluorescein
RL: ANT (Analyte); ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(a method of detecting analyte using semiconductor ***nanocrystals***
)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bruchez, M; US 5990479 A 1999 CA
(2) Bruchez, M; SCIENCE 1998, V281(281), P2013
(3) Chan, W; SCIENCE 1998, V281(281), P2016
(4) Dabbousi, B; JOURNAL OF PHYSICAL CHEMISTRY B, MATERIALS, SURFACES, INTERFACES AND BIOPHYSICAL 1997, V101(46), P9463 CA
(5) Lacoste, T; BIOPHYSICAL JOURNAL 2000, V78, P402A
(6) Massachusetts Inst Technology; EP 0990903 A 2000
(7) Univ Northwestern; WO 9804740 A 1998 CA

=> d his

(FILE 'HOME' ENTERED AT 21:45:35 ON 23 DEC 2002)

FILE 'CA' ENTERED AT 21:45:40 ON 23 DEC 2002
L1 25600 S NANOCRYSTAL? OR (QUANTUM DOT?)
L2 3 S L1 AND MULTIPLE ANALYTE?

=> b medline

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	16.34	16.55
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-2.36	-2.36

FILE 'MEDLINE' ENTERED AT 21:47:54 ON 23 DEC 2002

FILE LAST UPDATED: 21 DEC 2002 (20021221/UP). FILE COVERS 1958 TO DATE.

On June 9, 2002, MEDLINE was reloaded. See HELP RLOAD for details.

MEDLINE thesauri in the /CN, /CT, and /MN fields incorporate the MeSH 2003 vocabulary. See http://www.nlm.nih.gov/mesh/summ2003.html for a description on changes.

If you received SDI results from MEDLINE on October 8, 2002, these may have included old POPLINE data and in some cases duplicate abstracts. For further information on this situation, please visit NLM at: http://www.nlm.nih.gov/pubs/techbull/so02/so02_popline.html

To correct this problem, CAS will remove the POPLINE records from the MEDLINE file and process the SDI run dated October 8, 2002 again.

Customers who received SDI results via email or hard copy prints on October 8, 2002 will not be charged for this SDI run. If you received your update online and displayed answers, you may request a credit by contacting the CAS Help Desk at 1-800-848-6533 in North America or 614-447-3698 worldwide, or via email to help@cas.org

This file contains CAS Registry Numbers for easy and accurate substance identification.

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=> s l2
          241 NANOCRYSTAL?
         9440 QUANTUM
        15740 DOT?
          208 QUANTUM DOT?
                (QUANTUM(W)DOT?)
       362106 MULTIPLE
         7510 ANALYTE?
           50 MULTIPLE ANALYTE?
                (MULTIPLE(W)ANALYTE?)
L3          0 L1 AND MULTIPLE ANALYTE?

=> b uspatful
COST IN U.S. DOLLARS                                SINCE FILE      TOTAL
                                                      ENTRY     SESSION
FULL ESTIMATED COST                                    0.38       16.93

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)          SINCE FILE      TOTAL
                                                      ENTRY     SESSION
CA SUBSCRIBER PRICE                                    0.00       -2.36

FILE 'USPATFULL' ENTERED AT 21:48:07 ON 23 DEC 2002
CA INDEXING COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 19 Dec 2002 (20021219/PD)
FILE LAST UPDATED: 19 Dec 2002 (20021219/ED)
HIGHEST GRANTED PATENT NUMBER: US6496983
HIGHEST APPLICATION PUBLICATION NUMBER: US2002194666
CA INDEXING IS CURRENT THROUGH 19 Dec 2002 (20021219/UPCA)
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 19 Dec 2002 (20021219/PD)
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Oct 2002
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Oct 2002

>>>  USPAT2 is now available.  USPATFULL contains full text of the     <<<
>>>  original, i.e., the earliest published granted patents or         <<<
>>>  applications.  USPAT2 contains full text of the latest US         <<<
>>>  publications, starting in 2001, for the inventions covered in     <<<
>>>  USPATFULL.  A USPATFULL record contains not only the original     <<<
>>>  published document but also a list of any subsequent              <<<
>>>  publications.  The publication number, patent kind code, and      <<<
>>>  publication date for all the US publications for an invention     <<<
>>>  are displayed in the PI (Patent Information) field of USPATFULL   <<<
>>>  records and may be searched in standard search fields, e.g., /PN, <<<
>>>  /PK, etc.                                                         <<<

>>>  USPATFULL and USPAT2 can be accessed and searched together         <<<
>>>  through the new cluster USPATALL.  Type FILE USPATALL to           <<<
>>>  enter this cluster.                                               <<<
>>>                                                                    <<<
>>>  Use USPATALL when searching terms such as patent assignees,       <<<
>>>  classifications, or claims, that may potentially change from      <<<
>>>  the earliest to the latest publication.                           <<<

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> s l2
         1263 NANOCRYSTAL?
        27526 QUANTUM
```

```
        315560 DOT?
           767 QUANTUM DOT?
                 (QUANTUM(W)DOT?)
        666681 MULTIPLE
         12665 ANALYTE?
           674 MULTIPLE ANALYTE?
                 (MULTIPLE(W)ANALYTE?)
L4          18 L1 AND MULTIPLE ANALYTE?

=> d ti ab 1-18

L4   ANSWER 1 OF 18  USPATFULL
TI     Cell-based assays for the simultaneous and discrete analysis of
         ***multiple***     ***analytes***
AB     Multiplexed immunoassays are performed using cells expressing on their
       surface capture agents such as antibodies or antibody fragments. The
       cells serve as the solid phase supporting the capture agent and also
       express identifiers encoding the nature of the capture agent, allowing
       the cells to be used in multiplexed assays. For example, the identifiers
       can be internally expressed fluorescent proteins or externally expressed
       proteins that bind to tagged antibody reagents. Analyte detection and
       quantification are performed by detection antibodies binding to bound
       analyte or by detection proteins expressed by the cell in response to
       analyte binding. By encoding capture, identification, and analyte
       detection functionalities within the cell, expensive and time-consuming
       steps of antibody preparation, purification, and coupling to a solid
       phase are eliminated, making the cells advantageous over
       antibody-coupled beads currently used in multiplexed immunoassays.

L4   ANSWER 2 OF 18  USPATFULL
TI     Sensor device and methods for manufacture
AB     The present invention provides a device and methods for detecting the
       presence of an analyte in a sample using an encapsulated sensor. Methods
       for manufacturing the sensor are also disclosed.

L4   ANSWER 3 OF 18  USPATFULL
TI     Sensor platform, apparatus incorporating the platform, and process using
       the platform
AB     A sensor platform for use in sample analysis comprises a substrate (30)
       of refractive index (n.sub.1) and a thin, optically transparent layer
       (32) of refractive index (n.sub.2) on the substrate, (n.sub.2) is
       greater than (n.sub.1). The platform incorporates one or multiple
       corrugated structures in the form of periodic grooves (31), (33), which
       defines one or more sensing areas each for one or more capture elements.
       The grooves are so profiled, dimensioned and oriented that when coherent
       light is incident on the platform it is diffracted into individual beams
       or diffraction order resulting in reduction of the transmitted beam and
       an abnormal high reflection of the incident light thereby creates an
       enhanced evanescent field at the surface of the or each sensing area.
       The amplitude of this field at the resonant condition is greater by an
       order of approximately 100 than the field of prior art platforms so that
       the luminescence intensity created from samples on the platform is also
       increased by a factor of 100. Also disclosed are an apparatus
       incorporating the platform and a method of using the platform. Further
       increases of amplitude have been detected by using light having a linear
       component which gives rise to TM excitation and/or irradiating the
       platform from the substrate side.

L4   ANSWER 4 OF 18  USPATFULL
TI     Devices and methods for monitoring an analyte
AB     A device for monitoring an analyte is described, which includes (a) a
       support having an interior surface and an exterior surface; (b) a
       substrate connected to the interior surface of the support; (c) a spacer
       connected to the interior surface of the support and encompassing the
       substrate; and (d) a first membrane, permeable to the analyte, having an
       interior surface and an exterior surface, the interior surface being
       connected to the spacer. A chamber that encloses the substrate is
       defined by the interior surface of the support, the spacer, and the
       interior surface of the first membrane. The spacer exceeds the substrate
       in elevation such that a void volume exists between the interior surface
       of the first membrane and the substrate. A method of using the device
       for the transdermal monitoring of an analyte is also described.

L4   ANSWER 5 OF 18  USPATFULL
TI     Methods for simultaneously detecting both members of a binding pair
AB     Methods and kits for simultaneously measuring both members of a binding
       pair are described.
```

L4 ANSWER 6 OF 18 USPATFULL
TI Biosensors, reagents and diagnostic applications of directed evolution
AB Methods for sensing test stimuli using arrays of biopolymers are provided. Libraries of biopolymers, such nucleic acid variants, and expression products encoded by nucleic acid variants are provided. Reusable library arrays, and methods for their use are provided.

L4 ANSWER 7 OF 18 USPATFULL
TI Active and biocompatible platforms prepared by polymerization of surface coating films
AB The present invention recognizes that polymerizable coating films can be utilized to make chips such as biochips that include channel structures. These chips can optionally include one or more additional structures such as particles, biological groups or chemical groups. Such biochips having channel structures have a wide variety of useful applications, particularly in the field of laboratory on a chip and other applications where microfluidics are of importance. One aspect of the present invention is a platform that includes: a surface, a coating film and a channel structure. Preferably, the coating film defines in part said channel structure and more preferably the platform comprises a microchip.

L4 ANSWER 8 OF 18 USPATFULL
TI Sensor platform and method for the determination of ***multiple*** ***analytes***
AB The invention is related to a variable embodiment of a sensor platform based on a planar thin-film waveguide for the determination of one or more luminescences from one or more measurement areas on said sensor platform, comprising an optical film waveguide of different layers ("stratified waveguide") with a first optically transparent layer (a) on a second optically transparent layer (b) of lower refractive index than layer (a) and at least one grating structure for the incoupling of excitation light to the measurement areas or outcoupling of luminescence light from the measurement areas. The invention is also related to an optical system for luminescence determination and to an analytical system, comprising a sensor platform according to the invention, an optical system according to the invention, and supply means for contacting one or more samples with the measurement areas on the sensor platform. Further subjects of the invention are detection methods by luminescence detection, and the use of these methods.

L4 ANSWER 9 OF 18 USPATFULL
TI Methods for solid phase nanoextraction and desorption
AB Methods for and materials for separation and analysis of complex materials, including biological materials, are discussed.

L4 ANSWER 10 OF 18 USPATFULL
TI Method and apparatus for assay for ***multiple*** ***analytes***
AB A method and apparatus for assay of ***multiple*** ***analytes*** . The method uses a sensing element comprising a substrate upon which is arranged a multiplicity of recognition elements, such that each element is laid out in a predetermined pattern. Each pattern is unique in that it can give rise to a characteristic diffraction pattern in the assay. The patterns may or may not be interpenetrating on the substrate surface. The method of detecting ***multiple*** ***analytes*** includes contacting the medium of analytes with the patterned substrate, illuminating the substrate by a light source, and detecting any resultant diffraction image. The pattern of diffraction and the intensity of the diffracted signal provides information about the existence of specific analytes and their quantification.

L4 ANSWER 11 OF 18 USPATFULL
TI METHODS FOR SIMULTANEOUSLY DETECTING BOTH MEMBERS OF A BINDING PAIR
AB Methods and kits for simultaneously measuring both members of a binding pair are described.

L4 ANSWER 12 OF 18 USPATFULL
TI Immunochromatographic methods for detecting an analyte in a sample which employ semiconductor ***nanocrystals*** as detectable labels
AB Immunochromatographic test strip assays which employ semiconductor ***nanocrystals*** as detectable labels are disclosed, as are methods for detecting and quantifying one or more analytes of interest in a test sample using those assays. The test strips of the present invention permit detection and quantitation of one or more analytes of interest present in a test sample suspected of containing them, by using more than one semiconductor ***nanocrystal*** as a detectable label, each

of which emits exhibits a unique emission peak.

L4 ANSWER 13 OF 18 USPATFULL
TI Microarray methods utilizing semiconductor ***nanocrystals***
AB The present invention provides a number of different methods for conducting assays with different types of addressable arrays utilizing semiconductor ***nanocrystals*** to enhance detection. The invention includes methods utilizing semiconductor ***nanocrystals*** with nucleic acid, protein and tissue arrays, for example. By utilizing various useful aspects of semiconductor ***nanocrystals*** , the invention also provides a variety of different options for conducting multiplexed assays. Additionally, detection methods involving counting of individual complexes that include semiconductor ***nanocrystals*** are provided which can be utilized to expand the dynamic range of detection.

L4 ANSWER 14 OF 18 USPATFULL
TI Micro-label biological assay system
AB A small micro-label with a machine-readable indicia is used to react with and identify analytes in a multiplex reaction with biologic molecules.

L4 ANSWER 15 OF 18 USPATFULL
TI Fluorescent ***nanocrystal*** -labeled microspheres for fluorescence analyses
AB Provided are a fluorescent microsphere comprised of a plurality of fluorescent ***nanocrystals*** operably bound to a polymeric microsphere, and a method of producing the fluorescent microspheres which comprises contacting the polymeric microsphere with a plurality of fluorescent ***nanocrystals*** under suitable conditions in which the fluorescent naocrystals become operably bound to the polymeric microsphere. Also provided is a method of using the fluorescent microspheres capable of determining the presence or absence of a predetermined number of analytes in a sample by contacting the sample with the fluorescent microspheres, and detecting the fluorescence signal pattern of excited fluorescent microspheres bound to one or more analytes of the predetermined number of analytes, if present in the sample.

L4 ANSWER 16 OF 18 USPATFULL
TI Method of detecting an analyte in a sample using semiconductor ***nanocrystals*** as a detectable label
AB The use of semiconductor ***nanocrystals*** as detectable labels in various chemical and biological applications is disclosed. The methods find use for detecting a single analyte, as well as ***multiple*** ***analytes*** by using more than one semiconductor ***nanocrystal*** as a detectable label, each of which emits at a distinct wavelength.

L4 ANSWER 17 OF 18 USPATFULL
TI Biological applications of ***quantum*** ***dots***
AB The present invention provides a composition comprising fluorescent semiconductor ***nanocrystals*** associated to a compound, wherein the ***nanocrystals*** have a characteristic spectral emission, wherein said spectral emission is tunable to a desired wavelength by controlling the size of the ***nanocrystal*** , and wherein said emission provides information about a biological state or event.

Bawendi (Applicant's parent + related case)

L4 ANSWER 18 OF 18 USPATFULL
TI Method of detecting an analyte in a sample using semiconductor ***nanocrystals*** as a detectable label
AB The use of semiconductor ***nanocrystals*** as detectable labels in various chemical and biological applications is disclosed. The methods find use for detecting a single analyte, as well as ***multiple*** ***analytes*** by using more than one semiconductor ***nanocrystal*** as a detectable label, each of which emits at a distinct wavelength.

=> d all 17-18

L4 ANSWER 17 OF 18 USPATFULL
AN 2001:185049 USPATFULL
TI Biological applications of ***quantum*** ***dots***
IN Bawendi, Moungi G., Boston, MA, United States
Mikulec, Frederic V., La Jolla, CA, United States
Sundar, Vikram C., Stoneham, MA, United States